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The conclusions are that "the radial structure of the seed, the short free apical portion of the nucellus, the presence of a pollen chamber, the extension of the bundle system into the free portion of the inner integument, the complex structure of the outer integument, are all points of contrast with *Welwitschia*, and probably indicate the more primitive nature of the *Gnetum* ovule." Resemblances to *Bennettites* are also pointed out, and the general impression is left that *Gnetum*, *Welwitschia*, *Bennettites*, and *Lagenostoma*, on the basis of ovule structure, are all from some common ancestral stock.—J. M. C.

Annual ring and medullary rays of *Quercus*.—GROOM¹⁸ has investigated the evolution of the annual ring and medullary rays of the oak, using numerous and widely distributed species, and has reached the following conclusions. The very distinct annual rings of the deciduous species become less marked in evergreen species, but may be recognized by certain structural features that are enumerated, any one or more of which may be lacking. There is an interesting correspondence between the habit and the arrangement of the large vessels in the annual ring. "Species showing the most striking pore-zone are deciduous; those showing it regularly and distinctly, but not having so marked a disproportion in size between the innermost and outermost vessels, are subevergreen; whilst those species with no trace of a pore-zone are truly evergreen." In addition to these categories, there are transitional forms with corresponding transitions in the pore-zone display.

All species were found to possess uniseriate shallow medullary rays, and some possess also broad, high multiseriate rays; and there are numerous transitional stages between these two kinds of rays. The author was not able to decide which type was primitive, the evidence being contradictory as yet. There are cases, as in seedlings of *Quercus* and *Alnus* (BAILEY and EAMES), in which narrow rays form broad ones; other cases, as in *Fagus* (JOST), in which broad rays divide into smaller ones; and still other cases, as in seedlings of *Fagus* (TABOR), in which both kinds of changes go on simultaneously in the rays of the same annual ring.—J. M. C.

Animal parasites of *Nepenthes*.—An interesting case of symbiosis, somewhat analogous to the presence of intestinal parasites in animals, has been reported by JENSEN.¹⁹ The pitchers of *Nepenthes* have long been known to be partially filled with a fluid containing enzymes in which dead insects seem to be digested, but only with the observations of the present author has attention been directed to the fact that several species of dipterous larvae appear to develop normally in this fluid. So abundant are they that JENSEN declares that of the hundreds of pitchers he has examined from year to year at Tjibodas,

¹⁸ GROOM, PERCY, The evolution of the annual ring and medullary rays of *Quercus*. Ann. Botany 25:983-1003. pls. 74-76. 1911.

¹⁹ JENSEN, HJALMAR, *Nepenthes*-Tiere. II. Biologische Notizen. Ann. Jard. Bot. Buitenzorg Suppl. 3. pt. 2. 941-946. 1910.